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A
FEW OBSERVATIONS
ON THE
CLIMATE OF TENERIFFE.

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OBSERVATIONS ON THE CLIMATE OF TENERIFFE.

IN drawing attention to a few scattered facts concerning Teneriffe, I am not anxious to urge this climate in preference to others. I would not venture to say that it will be of more service than another; nor preferable to many other invalid resorts. In bringing forward Teneriffe in this paper, I would merely draw attention to the few facts gathered, and the few observations gleaned, during a two months' residence in Santa Cruz, knowing that it is only by such information, imparted by those who have had experience, that facts are elicited and advantages reaped.

The climate of Teneriffe differs from that of Madeira in several respects. That of Madeira is well known, many persons having gained such experience as enables them to speak favourably and decidedly. And in this respect many are correct, for to them is Madeira a place of relief, and an antidote to many sufferings. But it is incumbent on all who would truthfully observe the different arrangements of nature, to note the advantages and disadvantages of every place.

The climate of Madeira is acknowledged to be to several a source of benefit, and if so, the Canaries, situated as they are in much the same locality, may be expected to differ very little.

Placed in 28° of latitude, and nearer the African coast, it follows that the atmosphere will be drier, from its nearer approach to the equator. To some this will be an advantage, to many the reverse. Lying 200 miles further south, these islands partake more generally of a tropical appearance. Excessively hot in summer, they, from their greater amount of high land, present a greater proportional degree of cold in winter. This is especially the case in the island of Teneriffe, which, owing to the Peak, presents some of the winter phenomena observable in mountainous continental districts. And in this respect it differs from Madeira, which concentrates within itself the beauties of the tropics with the genial coolness of an English autumnal noon. Of the seven islands composing the group, that of Teneriffe presents the most favourable resources for invalids; for at Santa Cruz, which is the chief town, all English and other steamers stop; there all functionaries live, and commerce exists.

Lying on the southern side of the island, with somewhat of an eastern exposure, the town sometimes suffers from the African winds. But in other respects it is sheltered, for all round a low

ridge of mountainous country preserves it from the northern and north-west winds. It is exposed to the sun all through the year, with only the sea breeze, if the wind be favourable, to relieve the excessive heat. In size it is inconsiderable; in invalid accommodation very scanty. Cleanliness, however, in outward show, is no fault, while taste and convenience are always consulted: the well paved streets, whitewashed tidy houses, presenting a great contrast between those of the Spaniards on the continent and those on the island. The Peak is situated near the north-western extremity, while, stretching east, runs a ledge of hill, broken here and there by ravines and defiles of no great size when seen from the sea, and of no great influence over the climate of the town which lies at their foot. Towards the south-eastern extremity lies Santa Cruz. On the western shore, immediately at the foot of the Peak, lies Orotava, while between the two, among the high lands, lies Laguna. This, during winter, is damp and dreary in the extreme; in summer it is the resort of the population of Santa Cruz. Although this latter is so damp, Santa Cruz itself is the very opposite; for except the dew and sea breeze in the evening, the atmosphere seems to abound in dryness. In summer and autumn, the foliage is burned up, the people cannot show themselves during mid-day, and everything languishes for moisture. It is not completely hedged in by mountains, like Funchal, but, lying at the foot of a gradual declivity of no great height, the natural scenic effect is not good. Besides, the soil seems so barren, so dry, so scanty; no foliage, nothing save defiles of no great extent covered with withering grass, that expectations are destroyed and hopes disappointed. Few houses save those in the town are seen; few gardens recal pleasant recollections; all is barren. Yet the same might have been said of other parts a few years back, and patience must be practised, experience gained, ere the same beautiful plenty is seen in Teneriffe as greets the eye from Funchal harbour. At first sight, every part looks scorched and withered, save where the deep shade of the orange leaf is seen mixed with its golden apple.

The town, of no great size, looks scattered, and presents nothing save white houses, of two or three but mostly of one storey in height. White walls surround them, while the coast fortifications, being of the same colour, produce an enlivening effect. All above, on the gentle slope, is scorched dried-up pasturage, with here and there plantations of cochineal, which being trained on broad-leaved stunted cactuses of rather a pale green colour, do not add to the beauty of the scenery. This rearing of cochineal forms at present the main employment of those who possess land near Santa Cruz, so that everything gives way to this, producing a desert-like landscape. The sun is very strong, and, meeting with no counteracting agency, shines all day on the white-washed walls and houses, producing a heat which in summer and autumn is hardly to be tolerated even by the natives. In winter even the reflection from an extensive white wall is overpowering. The streets are neatly paved, clean, and not too narrow,

while the houses themselves look comparatively clean and comfortable. Along the shore, towards the Lazaret, a good carriage-way extends; while in the other direction a delightful path leads in the shore and under the cliffs which stretch towards the eastern angle. There runs round the town, on the land side, a small carriage-road, which joins a very broad one stretching out twelve or twenty miles to Orotava. Towards the north-west, on high ground of a table-land character, six miles from Santa Cruz, lies the old capital, Laguna. Almost deserted during the winter, the dreary look of the empty large houses, still retaining the ornaments and devices of bygone nobility, amidst almost total solitude, present no attractions. During the summer, however, the green suburbs, the shade of the pines and arbutus, and the cooler air, attract the sea-side population, and then the alameda and the streets of this town present a lively appearance.

Orotava, the next town of importance, lies completely on the west coast, at the foot of the Peak, which towers away to the south. This is said to possess some conveniences for invalids, and several English are now located there; but no vessel touches at that port, while the road over the island from Santa Cruz not being completed, access is at present very inconvenient. Thus the resources in Teneriffe are what might be expected from a native industrious, intelligent people, uninfluenced by fashion or change. The roads, houses, and gardens, few though the latter be, their cultivation of land, all excel their brethren on the continent, whom they do not particularly like. There is then room and opportunity for improvement, and sufficient talent to appreciate its advantages.

Situated on an island, amid a vast extent of sea, Teneriffe cannot be so dry as a continental inland, or east coast, for the sea air surrounding must imbue with moisture all things submitted to its influence. Whether the wind come from one or other of the points of the compass the result will be the same, provided the heat be equal. But this is not so. In summer the heat overcomes the moisture, and in this particular instance has the same effect on the damp atmospheres of other seasons, even of the winter. As already said, the atmosphere is dry, in other words, the heat is sufficient to overcome the damp, and so prevent the extreme languishing feeling of other climates. Sometimes, doubtless, it may assume this latter character, it may cause languor and disinclination for exertion, only however occasionally, and under certain conditions. The variations of the wind are also great, though from its situation Santa Cruz is sheltered from the north and north-west winds. These, especially the latter, are drier and colder than the rest, and have some twenty miles of land to come over previously; in summer, warm from the heated ground even to an intolerable extent; while in winter, the rain or wet upper lands impart a damp chill, and the snow, save when it is melting, a brisk sharp feel. The north-east wind comes sweeping round the east point sometimes high, during the rainy seasons stormy, but generally it imparts an agreeable cool-

ness to the over-heated air. The south wind comes with full force against the valley, but so seldom as to cause no uneasiness. During the winter, mists are seen at sea, some winds are felt perceptibly damp, even saturated like a November fog, occurring either when the sun is clouded, or temporarily overpowered by the superabundant moisture, or when the breeze is not stormy enough to carry it rapidly away. They occur but seldom, though the air itself, owing to the extent of surrounding sea, must always be more or less charged with similar damp particles. The east and south-east winds, originating from the African continent, when stormy, are parchingly hot and dry, producing the same effect as a sirocco. These are rare, however, and during the winter have such a distance of sea to traverse as will, to a certain extent, compensate for the dryness. Again, some winds from the same direction are similar to the others, moist and foggy, evidently showing their marine origin, though the space for such is much more circumscribed than that of the west, north or south. The north-east wind serves as the cooling evening breeze during the summer and autumn, and, independently of it, at sunset the evening sea breeze regularly performs the same office. Here, as elsewhere, the rainy seasons are periodical, the one towards the end of autumn, the other towards the beginning of spring, or October and February. Then the rains descend, the winds blow, and every element seems in commotion; the rivers, dry for months, in the course of a few hours almost overflow their banks. For days, for a fortnight, perhaps three weeks, will such continue, green, fresh verdure taking the place of dry barren, burnt up pasturages. Sometimes their storms are perfect hurricanes, but seldom do they diminish the *real* temperature as marked by the thermometer beyond a few degrees. The slight difference can easily be made up by a warm room, though at first from the sensations experienced, one would not expect such. For it must always be remembered that the chill or heat of these warmer climates affects us in different modes and degrees according to our longer or shorter stay previously in them. One who has been several months or only weeks in one of these climates will complain of chill and discomfort when a greater stranger will be complaining of the reverse, and one accustomed to nought save sunny dry days will feel wet stormy weather more cold and disagreeable than it really thermometrically is.

That such is the case a reference to tables of the thermometrical variations will show, for then it is seen that while in the room the markings are 68°, in the rain it will be only 65° or 3° less. The same thing occurs in the case of wind, which reduces the thermometer from 69° to 66°. A drizzly wet reduces it 5°, from 64° to 59°, while a wind coming off the snow-clad shoulders of the Peak will bring it down from 63° to 55° or 8°. In all these instances the people accustomed to invariable sun will feel chilled beyond the true or actual temperature, lowered though it be. In looking over the same tables of variations, great difference will be seen to exist between the temperature of the sun's direct rays and that of

the shade. In those tables the evening and other markings were made in a room in which no fire was used, where the window was constantly open during the day, and which had an exposure toward the hill side away from the sun. The direct heat of the sun in January was 99° or 100° , 102° about ten A.M., and mid-day gradually losing strength by two P.M., being then 94° , 95° . In February 19th, while the sun's temperature was 89° , that of the wind was only 61° in the shade. But this was one of those clear frosty days caused by the brisk wind coming off the snowy upper lands, and partaking of many of the characters of the wind on the east coast of Spain. By reference to the table of hygrometrical markings, it appears that on the very same day, especially toward the afternoon, it was drier than on any previous one that month, although the rainy season could not have been properly said to be over.

The two months which I spent in the island, unfortunately were the worst in the year. Wet, damp February, and a somewhat cold January, form no real or satisfactory index to the remaining parts of the year. The first fortnight, from the beginning of January up to the 24th, was beautiful, and the nights delightful, such as gave a pretty fair notion of the previous summer and autumn months. Cloudless, sunny, sufficient air to prevent extreme heat, such, with the only exception of diminished sun's power, were the characters. The rest of the month was alternately bright and cloudy, fair and showery. Gradually the rain came down heavier and heavier, the wind more continuous and gusty, the ground more and more damp, and consequently the air more and more raw. The snow this year came down further than usual, the rains being more violent and of longer duration. Still no very great difference in the mean monthly temperature is observable, for while the mean mid-day heat of January may be stated to be about 68° , that of February is about 66° ; and between these two means occur all the heaviest weather.

The other months are such as might be expected in such a situation. From the end of February, after the rains have ceased, on to August, the heat gradually increases, in which month, having attained its maximum, the temperature more rapidly falls, till having reached its minimum degree in the month of February, it again slowly rises. The autumnal rains in October tend to cool the air, producing a more genial uniform temperature during the winter months. From this moderate temperature of the worst season in the year, much benefit will be derived by the strangers, as it is agreeable, bright, and unrelaxing. The summer heats, especially toward the months of July and August, are so excessive that every one must seek refuge in Laguna, or some elevated spot, which example can easily be followed by the invalid, or perhaps Madeira might be substituted, if not, a voyage homewards. The winds sometimes blow strongly over the island, lowering the heat; but storms of any kind are rare, and the periodical rains, seldom severe, occur at the end of months characterised by uniformity of temperature and continual brightness.

The *mean annual temperature*, as given by Sir J. Clark, is 70·9, the degrees of temperature not being "equally distributed over the year." The temperature of so southern an island must be much warmer than others more northerly, as is shown by Santa Cruz being 7° warmer than Funchal during the summer. It is to this additional heat that the increased dryness of Teneriffe is partly owing, though it be at the expense of almost insufferable warmth. In winter, again, it is only 5° warmer, though, from its position 200 miles further south, a greater difference might have been expected.

Whether this lesser difference during winter result from the increase of moisture required in the warmer climates, or from the greater amount of high land and frequency of winds, the degree of dryness during the winter is greater, perhaps from the larger size of the island and more sheltered site of Santa Cruz. Orotava is liker Funchal in these respects, because it is more exposed to the western winds fresh from the sea, and is not protected to the west by such a pyramid of earth as the Peak. Again, the very fact of the Peak being so large, and such a vast receptacle for snow, will aid to chill the sun's heat without necessarily overcoming it, or adding to its moisture. It will give rise to higher currents of wind, colder during the snow period, and more similar to those of the continent.

The *mean monthly temperature*, as seen by tables, would give January 68°, February 66°. In a table drawn up by Mr C. Smith, he gives 68° and 65° as the respective maximum means of the same months in Orotava. Santa Cruz, however, being more sheltered, will have the above 68° and 66° as its mean, whereas Orotava, being more exposed, has the same for its maximum mean. Seeing there is so little difference, the same mean temperature may be taken for Santa Cruz as are found in Mr Smith's table given in Sir James Clark's work on Climate, taking the maximum line as the surer index. From this table, then, as well as from natural consequences, it is seen that the monthly mean temperatures gradually rise to August, which is the hottest month. From this they fall as gradually to February, which is the coldest. This taken at 66°, presents no very great degree of cold, the wet causing more uneasiness than the cold itself. This is also the rainy month, and the first twelve days were more or less rainy, either showery during the forenoon or the afternoon, or drizzling all day. From that to the 22d it was fine, when, owing to a south-west wind, a sultry, damp, misty, and rainy afternoon occurred. Showers are marked several times afterwards, but the weather seemed to amend gradually though surely. Up to the 16th of January the weather was very fine, genial and warm, with the exception of one afternoon, when a slight sirocco was wafted across from Africa. After the 16th, however, the days became gradually more and more cloudy, raw, and the hills more wrapped in mist and showers, the winds more ungenial and chilling. Mist was seen over the sea also, and the wind which brought it towards the island felt more chilly and raw. This continued with occasional glimpses of sun and fair weather until the 23d, when rain

came down, increasing in severity, until it passed away in February. This last winter, however, was peculiarly severe, and ought not, therefore, to be considered the general condition of such a season.

During this time the thermometer reached its lowest point, but gradually; from 71° it came down to 62° or 63° in January, and in February keeping very regularly at 66° or 65° at first, for towards the end of this month some considerable variation may be noticed. On the 23d, a close sultry warm day, the thermometer rose to 70° , the previous days having also been warm. Next day a north-east wind set in, and sweeping round the eastern and northern hills, not yet dried from their half-finished saturation, came down with such a degree of cold as to make the thermometer fall from 66° to 62° , or 61° at night. The monthly variation for January is therefore 9° to 8° , and for February 8° (taking these two extreme markings, which, however, may be looked on as accidental), or more generally 3° . The difference between these two months is less, only amounting to 2° , or, according to Mr Smith's table, 3° . From this it ascends in March to 4° , in April to 5° , and so on.

The *maximum temperature* marked during this month is 71° for mid-day, and morning 67° , rarely 67° for evening.

The *minimum* is for the same times respectively, 63° , once 62° , and 58° to 60° . The monthly variation will thus be 8° to 9° .

In February, the maximum temperature marked was, for the morning, 68° ; for mid-day, 70° ; and for the evening, 66° ;—the minimums being 62° for the morning and mid-day, 61° for the evening.

The monthly variation will be 6° , 8° , and 5° respectively, showing a greater equality and consistency. But these being taken from the extreme markings, for instance, the solitary 70° of the mid-day of February 23, or the similar 62° , 61° of the 25th, a little allowance may be made. February is more equable in temperature, being the same as occurs about the middle and end of January, after the partial set in of the rains and destruction of very fine weather. When it is remembered that no sun is visible at Christmas, that often before the 24th of January it falls on the Peak, little surprise can be experienced at the rapid fall, or the extensive variation. This is given somewhat greater in the table above referred to, but on the west coast, while the accompanying figures show the little extent of the same in the subsequent months. The diurnal variation of either month thus taken, very little difference is seen between the two.

The *diurnal variation* of January ranges from 71° to 58° generally throughout the day, or is 13° .

The maximum morning marking amounts to 71° , the minimum to 62° —or gives a range of 9° . The maximum mid-day marking amounts to 71° , the minimum to 62° —giving a range of 9° . The maximum evening marking amounts to 68° , the minimum to 58° —giving a range of 10° .

Looking at each day, however, no such great difference will be found—from 71° to 67° or 4° , 64° to 60° , and 73° to 58° , or 5° being the average highest differences.

The mean temperature for the whole month will thus be 65° or $64\frac{1}{2}^{\circ}$.

The diurnal variation of February ranges from 70° to 61° , or gives a difference of 9° .

The maximum morning marking amounts to 68° , the minimum to 62° —giving a range of 6° . The maximum mid-day marking amounts to 70° , the minimum to 62° —giving a range of 8° . The maximum evening marking amounts to 65° , the minimum to 61° —giving a range of 4° .

The range for each particular day, however, is from 70° to 65° , or 66 to 61 —average, 5° for difference.

The mean temperature for the whole month will be 65° ,—the same as January.

A great difference is observable naturally between the shade and any exposed spot, either in sun, wind, or rain; but this can have no effect on an invalid, who should not be so exposed, and who here and elsewhere must expect privations and imprisonments similar to what occur at home. These, however, are not so many in winter, but must be endured, probably for thirty days or so, scattered over the winter. The last twenty days of January 1853, no one could enjoy, and the same may be said of the first half of February. Dangers exist in great number for the imprudent and the wilful, as no person can be exempt from chills caused by draughts or damp air, so readily encountered during these rainy seasons in any quarter. Still, in Teneriffe the bright sun soon removes all dulness, the clouds clear away before a strong current of air, and in a day or so everything assumes a delightful appearance.

Although a few fine days occurred in the first part of January, several were damp and sultry from sluggish currents of sea air, slowly driven along for several hours, before settling on the thirsting land. Then languor and inability or unwillingness for exertion came on, with occasional headach and heaviness. When the weather cleared up, the languor and headach disappear, and the full delights of living in such a genial climate were experienced. Another day about the same period was rendered uncomfortable from the African winds reaching the island, and causing symptoms of a very different nature from its irritating and exciting qualities.

Between these two extremes lies the mean of the climate of Teneriffe. It is drier than some and not so irritating as others. It possesses the qualities of a Continental sea-side, together with the advantages of an island situation.

The *Hygrometrical observations* taken from the markings of an old instrument are imperfect, but still, in the absence of anything better, may not be altogether undeserving attention. The mean point between *damp* and *dry* being marked zero, the needle fell to either side, according to the state of the atmosphere. It obeyed all variations very regularly, and seemed sensible to all changes. By this, then, it appears that during the first part of January, from the 12th to the afternoon of the 17th, tolerable dryness existed, the needle often stood at zero or 0, marking 1 to the damp or dry side, during the forenoon

or afternoon according to the wind or atmosphere. After this no markings occur on the dry side again, all being more or less damp, varying during the day, and from day to day, the effect of the rains. On the 10th, the marking is on the damp side, from 3 to 4, a few days before rain had fallen. Snow had appeared on the Peak, and though there was no wind, a sharp feeling could be perceived, not dry but moist. Next day 5 is marked on the damp side, rain during the morning, with damp east wind and clouds. The same may be noticed for the 12th. On the 13th all cloud and rain had disappeared, and 2 degrees to the dry side are marked. Towards evening a sea-breeze set in, and the needle set at $1\frac{1}{2}$ damp. On the 16th, 2 dry is again marked during the prevalence of a land wind from Africa. Next day, from 0 the needle set at 3 damp, and though the wind was still east, it was no longer irritating, but, on the contrary, moist and damp.

During the remainder of January and February, damp markings prevail, with showers, moist or sea-winds exemplifying their influence, the last-mentioned dry marking being an exception, caused by a dry land wind.

On the 19th of January the damp markings are only 2 or $2\frac{1}{2}$, though an east wind prevailed, exemplifying the fact that persons are too apt to call days damper, rawer, or colder than they really either thermometrically or hygrometrically are, for, as in this case, though the day did feel more raw and damp, it was, in fact, neither, being only $2\frac{1}{2}$ damp, and 68° mid-day temperature.

On the 15th February only 2 damp is marked for the afternoon, arising from a brisk, lively current of air from the west, tintured with the comparative dryness of land and the chill of snow, analogous to what occur on the Continent. But though thus derived or modified, the damp was only 2, while the temperature was 62° to 61° , 10 P.M. Two days after, the snow melting, rendered it more raw and damp.

From a fortnight to three weeks is the usual continuance of the rains both during the winter and spring; several days occurring both before and after, of so broken a nature as to prevent invalids from venturing out. The rain comes down in torrents, but the ground soon dries when the sun sets in with full uninterrupted ray. In some small districts near the foot of the hills and openings of the ravines, from the accumulated vegetable debris brought down perhaps only so far, and not washed away to the sea, slight effluvia may exist. In one defile near the high lands, ague from this cause is not unfrequent, but in the town it never occurs spontaneously.

From the foregoing statements, it seems as if Teneriffe offers advantages not possessed by other places, and which would be of great service to those with whom the extremes of dryness or moisture do not agree. It is more windy than other places, but it is drier. It is not situated on the Continent, and so possesses insular advantages, combined with others derived from its high mountain land, similar to what one meets on the land. It at present possesses good roads

for carriage exercise; and, owing to the native tact of the islanders, seems capable of great improvement and cultivation. There are no houses as yet fitted for invalids, save one or two, but, being a free port, Santa Cruz offers peculiar advantages for transportation of commodities.

Very warm during summer, it possesses a high land cool retreat, while the heat never diminishes to an extent which could do any harm. The English already there, are hospitable and attentive; their properties and persons well taken care of by a zealous and excellent consular. A cemetery is now given for Protestant purposes, and by this time, or during the present winter, a clergyman will be stationed there.

The resources as to food are good. Sheep are numerous and well fed. Milk, both cow's and goat's, is easily obtained. Fish, of various sorts, abound. Fruit, the orange, banana, and pine-apple, from the African coast, is in large quantities. The wheaten bread is very fair; but Indian meal serving the poor instead of our flour, less bread is used, comparatively speaking, than with us.

But great danger will arise, if care be not taken, and that constantly, against draughts and currents of air. Nothing is more easy than to keep a room sufficiently warm, but at the same time it is as easy to let in a current of air, refreshing though it may be, that will undo all the benefits.

As yet little convenience exists for invalid exercise, but little time will elapse before sledges or carriages will be numerous, while horses and ponies are always to be had, and camels for those who prefer an elevated seat and a see-saw motion.

Santa Cruz is easily reached by steamers to the west coast of Africa and South America, touched at by many vessels bound for Australia, Cape of Good Hope, and India, supplied by regular sailing traders for its oranges and cochineal, a constant source of communication is now open. Two Spanish steamers from Cadiz also have bimonthly communication with Santa Cruz.

Lying so far south, it is about forty hours longer passage than Madeira, having on the northern shores a rather rough sea. Mosquitoes exist all through the winter, destroying the repose and ruffling the mental tranquillity of any new comer.

The climate is between that of Madeira and that of the north shores of the Mediterranean. It is less languishing than the one, less exciting than the other. In this respect it may suit some who derive no benefit from either of the above localities, though as yet no proof can be adduced. That some have been benefited is certain, as I have seen one or two cases which, after passing a winter at Santa Cruz, felt much relieved. One was a severe cardiac disease, with angina, and he derived much benefit. Several others, again, more or less threatened with chest affections, have lived for years as comfortably as they could elsewhere, nay, with decided benefit, both at Santa Cruz and Orotava. Many constitutions cannot tolerate a depressing climate, while others again could not stand an

exciting one. Leucophlegmatic temperaments do not agree with excessive stimuli, and so would not do in such an exciting air. Brisk sanguine temperaments would not suffer from the climate of Teneriffe, save in the summer heats, which can easily be avoided, and they would have very few depressing days to complain of.

In bringing forward these few unconnected facts relating to a part of the island of Teneriffe only, I do so merely with a view to supply an acknowledged deficiency regarding our information of the climate of this island. The facts have pointed out the worst features of the winter climate; but if allowance be made for severity; if comparisons be instituted with the degree of temperature previously given, and calculations made from these data, the climate will appear warm, genial, unrelaxing, and pretty uniform from month to month. If it prove less relaxing than Madeira, and less exciting than Malaga, surely good will accrue to those who claim only partial benefit from either of the former.

Without prejudice in favour of this island or against that of its more northerly neighbours, it may be said, that the former does present some points of attraction in a hygienic sense, not found in the latter. It cannot be denied, that while many recover, and that wonderfully, from almost certain and expected deadly disease, numbers perish. That this, in many instances, is more the fault of the invalid than of the climate, is allowed. Some, again, are in such a state of debility when they arrive, that scarcely anything but death can await them. These considerations apply to all invalid resorts, east or west, north or south, and do not in the least detract from the main fact that to some a change of climate is often of infinite and most satisfactory service. The cases hitherto seen and treated in these resorts confirm this truth, and give us full warrant in treating future patients, other circumstances being favourable, in a similar manner. One only requires to go and look for himself to be convinced that in Madeira people are living, and likely to live, who, had they remained in this country, would long ago have paid their debt to nature. How it is that warmer climates act in bringing about a more healthy state is not yet solved, but if we remember that it is mostly in those who are in the primary stage that such a result has occurred, some clue may be obtained. The person is taken out of a damp, cold climate, transferred to one which, while it enables him to obtain several modes of exercise during all parts of the year, at the same time, from the greater heat, and consequent less requisite respiratory process, prevents, to a certain extent, the lungs from having an over much amount of duty. In other words, the heat of the animal economy being more easily kept up by the surrounding warm air, less blood will be sent to the lungs. This may appear paradoxical, but, in a warm climate, the tissues are not in the same shrivelled state as seen in many who suffer from cold in an English climate; the skin is called on to act more vigorously, while the circulation is, though regular and steady, less violent. If a patient makes little exertion fatigue will be unknown, and food not

taken in large quantity. Thus we have a sufficient nutrition without overloading the body; we have the skin called on to act; the tissues in that state so well known after exercise in a heated room or under heavy clothing; we have no rapid or violent circulation, no laboured respiration, the blood itself not requiring to be so freed from carbonaceous particles—in fact, we have almost all the requisites for rest and quietude to the lung. In climates such as Malta or Malaga, where the air is exciting, another influence will be brought to bear on the pulmonary tissues. From personal experience, we know that the dry exciting air of Malta has caused considerable, even serious inconvenience to several who had previously benefited from the climate of Madeira, and that similar occurrences have been noticed in other Mediterranean resorts. This merely proves, however, the often-repeated assertion, that it is only to certain constitutions and temperaments that either of these localities will bring satisfactory relief. But, even in this respect, Teneriffe enjoys apparent immunity from many of the inconveniences experienced in continental or Mediterranean residences. Isolated amid vast tracts of water, unaffected by continental winds on every side like Malta, lying nearer a well-known and much-frequented resort, Teneriffe is well calculated to play an equal part with Madeira in offering every possible opportunity for the benefiting of many invalids. Warmer, though perhaps more windy, it presents a brisk and less oppressive atmosphere than is to be found in the latter; while the exciting qualities observed in Malta and other eastern towns, are held in abeyance.

The excitement of the Mediterranean climates will influence the spirits, and, through them, the circulation, so that less exercise will probably be required, while a healing effect will also be exerted locally. Then, though still very great precautions and prudence will be necessary, some lively constitutions will thus be benefited.

In Madeira, again, where the heat is more of a calming, soothing nature, the local effect will act differently, requiring the same precautions, and doubtless leading to as beneficial results. For different constitutions will be benefited by different climates, and while the leucophlegmatic and puny temperaments are fostered in the one, the lively and sanguine will do well in the other.

Teneriffe enjoys a somewhat medium climate, and so will benefit either of these constitutions, and be of service to many of those who will fairly give it a trial.

It is not to extol Teneriffe that this paper is written; but rather to point out facts, with a view of alleviating suffering, or enabling some persons to spend their short lives more comfortably, and perhaps of prolonging them, and thus aid, be it ever so little, in the great cause of humanity.

APPENDIX.

THE appended Tables of Thermometrical and Hygrometrical Markings were made out during the two months of January and February 1853, and from them the previous notes were extracted.

The Thermometer used, though not a register one, was very correct whenever any comparative trial was made. The room was always in the shade, always had an open window during the day. In every room, save the kitchen, fires were unknown. Looking over the first two tables it appears that 58° is the lowest marking, and that on the evening of January 29. No lower markings are observed in February; on the contrary, toward the end of the latter month, a slow but steady increase in temperature is observed.

The table of Thermometrical Variations is introduced merely for the purpose of giving data for further calculations, or for drawing inferences regarding the changeability of climate. The sun's direct rays always brought the mercury up to 100° during the fore part of the day, except on the 15th February, when it was only 89°. This arose from circumstances, that a breeze from the Peak, then covered with snow, modified the heat of the sun.

The Hygrometrical Markings are from an old instrument, which having zero for its starting point, moved to the right to mark dry, to the left to mark wet. It was sensible to very delicate atmospheric influences, and may thus be of service.

I may here remark that snow was first seen on the Peak on January 7. After this the nights became somewhat cloudy, sometimes a slight shower, till the 17th, 18th, and 19th, when rain became more common. This broken weather lasted till the 15th February, when again steady, genial, calm, bright weather set in. This winter (1853) was called a heavy winter, the snow being further down the Peak than usual; though it was high above any habitable spot.

In looking over these tables, February seems more moist, and must be so, as the rain coming down toward the end of January is readily soaked up by the parched ground, whereas all February and March the soil will be giving back, under the heating rays of a powerful sun, some of its absorbed moisture. This will to a certain degree produce the genial spring-like sensations felt toward the end of February.

THERMOMETER MARKINGS.

January 1853.

DAY.	10 A.M.	2 P.M.	10 P.M.	DAY.	10 A.M.	2 P.M.	10 P.M.
	Degrees.	Degrees.	Degrees.		Degrees.	Degrees.	Degrees.
4	68	68	67	18	68	68	66
5	71	71	67	19	68	68	66
6	71	71	67	20	67	67	67
7	68	68	67	21	68	68	66
8	68	68	67	22	67	67	66
9	69	71	68	23	68	68	64
10	67	68	67	24	67	68	64
11	68	68	67	25	67	67	64
12	68	69	66	26	67	66	61
13	68	70	67	27	66	66	60
14	68	70	66	28	64	63	60
15	68	71	66	29	63	62	58
16	68	70	67	30	62	63	62
17	68	70	68	31	63	64	63

THERMOMETER MARKINGS.

February 1853.

DAY.	10 A.M.	2 P.M.	10 P.M.	DAY.	10 A.M.	2 P.M.	10 P.M.
	Degrees.	Degrees.	Degrees.		Degrees.	Degrees.	Degrees.
1	65	65	64	15	65	65	61
2	65	65	63	16	64	64	61
3	65	66	64	17	64	65	64
4	67	65	64	18	66	65	61
5	65	65	64	19	65	65	64
6	64	66	62	20	66	66	64
7	67	65	63	21	66	66	64
8	65	65	62	22	68	68	66
9	66	66	64	23	68	70	65
10	65	65	63	24	66	66	65
11	65	65	64	25	62	62	61
12	64	63	62	26	65	66	63
13	65	65	64	27	65	65	64
14	65	65	64	28	66	...	...

THERMOMETRICAL VARIATIONS.

			Degrees.
January 5.	Thermometer in shade,	.	67 to 71
" 6.	...	{ in shade, . . .	68
		{ in sun, . . .	100
		{ at night, . . .	64
" 9.	...	{ in shade, . . .	69
		{ in sun, { 10 A.M., . . .	100
		{ 2 P.M., . . .	94
" 14.	...	{ 9 A.M., { in room, . . .	68
		{ outside, . . .	63
		{ 10 P.M., { in room, . . .	66
		{ outside, . . .	63
" 18.	...	{ in shade, . . .	68
		{ in wind, { morning, . . .	67
		{ evening, . . .	64
" 22.	...	{ in shade, . . .	69
		{ N.E. wind, . . .	66
" 24.	...	{ in room, . . .	68
		{ in rain, . . .	65
" 28.	...	{ in room, . . .	63
		{ outside, . . .	55
		(Snow on Peak.)	
February 4.	...	{ 10 P.M., { in room, . . .	64
		{ in rain, . . .	59
" 15.	...	{ in shade, . . .	65
		{ in sun, . . .	89
		{ in wind, . . .	61
		{ at night, . . .	55
		(Frosty.)	
" 19.	...	{ in shade, . . .	65
		{ in sun, . . .	99
		(10 A.M.)	
" 20.	...	{ in shade, . . .	66
		{ in sun (obscured by light clouds), . . .	91
" 25.	...	{ in country, . . .	62
		{ in town, . . .	65

HYGROMETRICAL MARKINGS.

			Damp.	Dry.	Remarks.
January 10.	...		3.5	...	{ Snow on Peak. Bank of clouds over horizon. Clear.
" 11.	...		5	...	{ Rain during night. Cloudy day.
" 12.	...		3	...	Clear. Wind west.
" 13.	{ Morning, Evening,		... 1	2 ...	Clear. Sun strong. Wind off sea.
" 14.	{ Morning, Evening,		1 ...	1	No wind.
" 15.	{ Morning, Evening,		... ...	1 1	Very warm. No wind.
" 16.	{ Morning, Evening,		... $\frac{1}{2}$	2 ...	{ Strong E. wind, dry and scorch- ing. Fell towards evening.
" 17.	{ Morning, Evening,		0 3	0 ...	Cloudy. Sea wind.
" 18.	All day,		3	...	East wind.
" 19.	All day,		2	...	Do. do.
" 20.	{ Morning, Evening,		3 5	... ...	Do. do. S.E. hazy.
" 21.	All day,		5	...	Raw sea wind.
" 22.	All day,		4	...	N.E. wind.
" 23.	All day,		4 to 5	...	Rain.
" 24.	{ Morning, Evening,		6 5	... ...	Misty. Clear.
" 25.	All day,		6	...	Rain.
" 26.	All day,		5	...	Cloudy. Showery.
" 27.	All day,		5	...	Rainy.
" 28.	...		$4\frac{1}{2}$	...	Cloudy.
" 29.	...		$4\frac{1}{2}$	...	Showery.
" 30.	...		$4\frac{1}{2}$	...	Showery.
" 31.	...		$4\frac{1}{2}$	...	Cloudy. No rain.

HYGROMETRICAL MARKINGS.

		Damp.	Dry.	Remarks.
February	1. All day,	5	...	N.E. wind.
"	2. All day,	5	...	Rainy afternoon.
"	3. All day,	5 to 6	...	Drizzly.
"	4. All day,	5 to 6	...	Rainy afternoon.
"	5. ...	5	...	Rain.
"	6. ...	4½	...	Clear. Warm.
"	7. ...	5	...	Rainy all day.
"	8. ...	4	...	N.W. wind.
"	9. ...	5	...	{ Rain during morning. Genial day.
"	10. ...	5	...	Showery.
"	11. ...	4½	...	Clear. No rain.
"	12. ...	4	...	No rain.
"	13. ...	3½	...	No rain.
"	14. ...	3	...	A shower or two.
"	15. { Morning, Evening,	3 2	...	{ Brisk fall all day.
"	16. All day,	2	...	Calm, beautiful day.
"	17. { Morning, Evening,	2 4½	...	Wind west. Calm. Close.
"	18. All day,	3	...	Wind off sea.
"	19. { Morning, Evening,	3½ 4	...	Warm. Sea breeze.
"	20. All day,	5	...	Dull. Showery.
"	21. { Morning, Evening,	6 9	...	Sea wind. Sultry and close.
"	22. All day,	7	...	S.W. Wind.
"	23. ...	9	...	Drizzly.
"	24. ...	7	...	N.E. wind.
"	25. ...	6	...	N.E. wind.
"	26. ...	6	...	More genial.













